

REMARKS

Claims 1-45, as amended, are pending in this application. In this Response, Applicants have amended certain claims. In light of the Office Action, Applicants believe these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicants respectfully submit that the claim amendments do not limit the range of any permissible equivalents.

In particular, independent claim 43 has been rewritten to further clarify that the binding material is applied to the hoop-stress material before it is wrapped about the core instead of applying it to the outer surface of the hoop-stress layer. In addition, claim 9 has been rewritten to clarify an embodiment of the invention, which is supported by the instant Specification at page 7, lines 12-14. As no new matter has been added by the amendments herein, Applicants respectfully request entry of these amendments at this time.

Brief Description of the Present Invention

The present invention is directed to a golf ball formed with an improved hoop-stress layer. As recited in the claims, the hoop-stress layer is formed of a hoop-stress material that is coated with a binding material. The hoop-stress material may have an elastic modulus of about 10,000 kpsi or more and may be formed from glass, aromatic polyamides, carbon, metal, shape memory alloy, natural fiber, and mixtures thereof. *See, e.g.,* claims 4, 14, and 25.

Unlike dipping or spray coating a layer of material over a wound core as described in the references relied upon by the Examiner, however, the present invention is directed toward applying a binding material to the hoop-stress material before it is disposed on the core. *See* ^{critically} *e.g.,* independent claims 1, 31, and 43. The binding material may be activated before, during, or after the hoop-stress material is disposed about the core to increase the cross-sectional area of the hoop-stress material. *See, e.g.,* Claim 18 and Page 11, lines 25-26. As explained below, none of the references relied upon by the Examiner discloses these features of the invention.

THE REJECTIONS UNDER 35 U.S.C. § 112

Claim 9 was rejected under 35 U.S.C. § 112 as being indefinite for the reasons stated on pages 2-3 of the Office Action. Applicants respectfully disagree with the Examiner's statement that

“there is no description of ‘a hoop-stress layer disposed between the first and second layers of the encapsulating shell.’” The Specification teaches that

[i]n one embodiment, shown in FIG. 2, the golf ball of the invention has a fluid center 120 surrounded by an encapsulating shell of at least one layer. The hoop-stress layer 130 is preferably wound or wrapped around an encapsulating shell 125 or, in an embodiment not shown, the encapsulating shell 125 is made up of multiple layers and the hoop-stress layer is disposed therebetween.

Page 7, lines 10-14.

In an effort to more clearly track the language used in the Specification without reintroducing the word “therebetween”, claim 9 has been rewritten to establish a first and second encapsulating layer and a hoop-stress layer disposed between the two encapsulating layers. In light of this amendment and clear support in the Specification for the claimed subject matter, Applicants respectfully submit that the § 112 rejections of claim 9 has been overcome.

THE REJECTIONS UNDER 35 U.S.C. § 103

Rejection Based on Aoyama ‘801 in view of Boehm ‘100 and Umezawa ‘968 or Morgan ‘296

Claims 1-3, 5-13, 15-24, and 26-46 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,713,801 to Aoyama in view of U.S. Patent No. 5,919,100 to Boehm *et al.* and U.S. Patent No. 5,993,968 to Umezawa *et al.* or U.S. Patent No. 6,030,296 to Morgan *et al.* for the reasons stated on pages 3-8 of the Office Action. Applicants respectfully request the Examiner reconsider and withdraw this rejection at least on the grounds that none of the references teaches or suggests applying a binding material prior to disposing the hoop-stress layer about the core, as presently recited in all pending independent claims.

Aoyama ‘801, the primary reference relied on by the Examiner, generally discloses a golf ball having a solid core, a wound layer of high tensile elastic modulus, and a cover. *See, e.g.,* Col. 2, lines 41-48. Because Aoyama ‘801 is completely silent as to the binding material applied to the hoop-stress material, the Examiner does not rely on Aoyama ‘801 for this feature of the claims. Instead, the Examiner recognizes that Aoyama ‘801 is lacking elements of the presently recited invention, and cites Boehm ‘100, Umezawa ‘968, and Morgan ‘296 in an attempt to cure the deficiencies of Aoyama ‘801. However, the secondary references cited by the Examiner also do not

disclose or even suggest the application of a binding material prior to disposing or wrapping the material /strand(s) of the hoop-stress layer about the core.]

For example, Boehm '100 generally describes a solid, non-wound core portion made of at least a first, solid, non-wound layer 20 surrounding the fluid filled center and a second, solid, non-wound layer 22 surrounding the first layer 20. *See, e.g.*, Col. 7, lines 14-25 and 36-40. In light of Boehm's silence as to the presently recited hoop-stress layer (or even a wound layer), it follows that the reference is also completely silent as to using a binding material as a coating for the material / strand(s) of the hoop-stress layer.

Those of ordinary skill in the golf ball manufacturing art are aware of the many differences between wound golf balls and non-wound golf balls. For example, the function of the hoop-stress of the cover of a wound ball is not important because the wound center has a high velocity on its own, whereas the hoop-stress of the cover of a non-wound ball is highly important to counter the marginal velocity of the inner components. *See, e.g.*, Aoyama, Col. 1, lines 11-23. Therefore, it would not have been obvious at the time of the invention to use a reference excluding a hoop-stress layer, such as Boehm '100, to modify the layers disclosed by Aoyama '801 and successfully achieve the present invention. Only the present invention provides this motivation, which is a classic case of hindsight.

In addition, neither Umezawa '968 nor Morgan '296 discloses or even suggests applying a binding material prior to disposing the hoop-stress layer about the core. In fact, both Umezawa '968 and Morgan '296 teach only to form an extra layer over an already wound golf ball core. Umezawa '968, for example, teaches to dip or spray a urethane dispersion onto a wound core (Col. 6, lines 25-28), and Morgan '296 teaches to submerge a wound core in latex (Col. 5, lines 8-10). Because neither reference teaches or suggests this claimed feature, they do not cure the deficiencies of Aoyama '801, Boehm '100, or any combination thereof.

Furthermore, Applicants submit that the four cited references would not be combined by a skilled artisan in the manner suggested by the Examiner absent the improper use of hindsight. There are many significant differences between Aoyama '801, Boehm '100, Umezawa '968, and Morgan '296 that would prevent their combination. As discussed above, a skilled golf ball artisan would not have been motivated combine a wound ball reference (Aoyama '801) with a non-wound ball reference (Boehm '100) because of the many differences between the two types of balls, which include material selection and physical properties.

And, while Umezawa '968 and Morgan '296 both generally disclose rubber windings, both are silent as to the use of non-rubber winding materials. *See, e.g.*, Umezawa '968 at Col. 8, lines 18-34 (polyisoprene rubber and natural rubber), and Morgan '296 at Col. 6, lines 15-21 (solid rubber and cured latex rubber). The winding materials taught by Aoyama '801 are very different from the materials suggested by the secondary references. Also, the tensile elastic modulus of the rubber threads of Umezawa '968 and Morgan '296 is typically several magnitudes lower than the threads discussed in Aoyama '801.

Moreover, Aoyama '801 clearly states that it is preferred that the cover is "in direct contact with the wound layer." Col. 3, lines 23-25. In contrast, Umezawa '968 expressly teaches to "protect" the windings by applying a urethane dispersion over them before molding the cover. *See, e.g.*, Col. 3, lines 18-24. The MPEP makes clear that a reference cannot be modified or combined in a manner that would render it unsatisfactory for its intended purpose. *See* MPEP § 2143.01 at 2100-124-25 ("If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification."). In this case, the combination of Aoyama '801 and Umezawa '968 would defeat the primary purpose of the two references.

Finally, Applicants further disagree with the Examiner's reasons for rejecting dependent claims 2-3, 5-13, 15-24, 26-30, 32-42, and 44-46. Applicants have not addressed each specific rejection herein for the sake of conciseness. As required by MPEP § 2144.03, however, Applicants contest the Examiner's reliance on Official Notice in his rejections and would discuss this matter further should the Examiner still find that the independent claims are not patentable over the cited references.

Thus, for the reasons set forth above, Applicants respectfully submit that no combination of Aoyama '801, Boehm '100, Umezawa '968, or Morgan '296 renders obvious the present invention. Applicants, therefore, respectfully request reconsideration and withdrawal of the rejection based thereon.

**Rejection Based on Aoyama '801 in view of Boehm '100
and Umezawa '968 or Morgan '296, further in view of Maehara '736**

Claims 4, 14, and 25 were also rejected under § 103(a) as being obvious over the references applied in claim 1, and further in view of U.S. Patent No. 5,913,736 to Maehara *et al.* for the

reasons stated on page 8 of the Office Action. Again, no combination of the cited references renders obvious the presently recited claims.

The Examiner cited Maehara '736 simply for its disclosure of shape memory alloy, but this reference is completely silent as to any type of binding material applied to the shape memory alloy or as to increasing the cross-sectional area of a hoop-stress material. And, for the same reasons as discussed above, a skilled artisan would not have been motivated to modify and combine Maehara's shape memory alloy layer with Aoyama '801, Boehm '100, Umezawa '968, or Morgan '296 absent guidance from the present invention. Simply stated, a skilled artisan would have no motivation to combine Maehara '736 with any other cited reference, and even if such a combination were made, the combination still would not teach or suggest several features recited in the claims.

For at least these reasons, Applicants respectfully request reconsideration and withdrawal thereof as to this rejection.

CONCLUSION

All claims are believed to be in condition for allowance. If the Examiner believes that the present amendments still do not resolve all of the issues regarding patentability of the pending claims, Applicants invite the Examiner to contact the undersigned attorneys to discuss any remaining issues.

No fees are believed to be due at this time. Should any fee be required, however, please charge such fee to Swidler Berlin Shreff Friedman, LLP Deposit Account No. 195127, Order No. 20002.0038.

Respectfully submitted,
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APPENDIX A
MARKED UP VERSION OF AMENDED CLAIMS

Please amend the claims as follows:

9. (Twice Amended) The golf ball of claim 2, wherein the encapsulating shell comprises a first encapsulating layer and a second encapsulating layer, and wherein the hoop-stress layer is disposed between the first and second encapsulating layers [of the encapsulating shell].

18. (Amended) The golf ball of claim 13, wherein the [wire, thread, or filament] at least one material has a first cross-sectional area, and wherein the activation of the binding material creates [that is coated with a binding material to create] a second cross-sectional area greater than the first.

43. (Amended) A golf ball comprising:
a core;
a hoop-stress layer wrapped about the core comprising:
at least one strand having a first cross-sectional area;
a binding material applied to the at least one strand prior to wrapping about the core to increase the first cross-sectional area by about 5 percent or greater; and
a cover.